Episode 20

TRANSCRIPT

NEW ZEALAND INFRASTRUCTURE COMMISSION *Te Waihanga*

A converging world

Infrastructure for a better future

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Please note: the transcript has been edited to make reading as easy as possible.

In this episode of Infrastructure for a better future, Peter Nunns, Acting General Manager – Strategy at Te Waihanga, speaks to Professor Jim Hall, who is the incoming President of the Institute of Civil Engineers in the United Kingdom. They discuss the Commission's work on a National Infrastructure Plan for New Zealand. Hall emphasises the importance of strategic infrastructure planning, sharing best practices, and addressing political short-termism. He also discusses the challenges of forecasting long-term infrastructure needs, the impact of climate change on infrastructure, and the necessity of prioritising resilience and adaptation.

Introduction: Welcome to 'Infrastructure for a better future', a series where we have honest conversations about the infrastructure challenges we are facing and how we can build a better Aotearoa New Zealand. In each episode we talk to experts from here and overseas about what works when it comes to addressing these issues.

Peter Nunns: We've got many expectations about what we need and want from our infrastructure; our roads, schools, hospitals, water networks and more. We know that we need to make some big decisions about getting the infrastructure we need in the right places at the right time and in a way that's affordable. To do this, we need to develop a shared long-term view of our infrastructure needs and priorities.

The Infrastructure Commission is currently working on a National Infrastructure Plan that seeks to address three key questions. One, what's needed and what will we need to spend over the next 30 years on infrastructure? Second, what are we currently planning on investing in and what are we doing at the moment? And third, what's the gap between our long-term infrastructure needs and our current investment intentions, and how can we go about addressing that gap?

These are some big questions and we're working on this from a few different angles, including looking at how we better prioritise and assess infrastructure projects through the Infrastructure Priorities Program (IPP), as well how we assess our long-term infrastructure needs. We have a lot of work ahead of us to answer these big questions, and we can't always do it alone. I've been really appreciative as we've thought about the plan and the different elements in it, for the opportunity to discuss with and seek feedback from the Enabling Better Infrastructure (EBI) group that is convened by the Institution of Civil Engineers (ICE) from the UK. Before I get into that, let me introduce myself.

I'm Peter Nunns, Acting General Manager of Strategy at Te Waihanga, the New Zealand Infrastructure Commission. Today, I'm delighted to be talking to Professor Jim Hall, who's the incoming President at the Institution of Civil Engineers, about the work that the Enabling Better Infrastructure (EBI) group has been doing. Jim is Professor of Climate and Environmental Risks at University of Oxford and Commissioner of the UK's National Infrastructure Commission. His work addresses how we need to adapt to climate change and the risks that it poses to infrastructure systems. He's internationally recognised for his research on risk analysis and decision-making under uncertainty for water resource systems, flood and coastal risk management, infrastructure systems and adaptation, and climate change. The EBI initiative, which he convenes, envisages a world where sustainable and resilient infrastructure supports people living safe, healthy and productive lives supported by good, well-planned infrastructure. To accomplish that, it brings together international, independent specialists with deep experience in infrastructure planning and delivery to support governments putting good decision-making into practice. Jim, thanks very much for joining us.

Jim Hall: My pleasure.

Peter Nunns: I just want to start off with a general question, just to introduce your work to our listeners. Can you tell us a little bit about the EBI's work on strategic infrastructure planning? Where has this come from? Where is it going? What are you doing in this space?

Jim Hall: The EBI is really motivated by the recognition that if we're going to make infrastructure more sustainable and address people's needs for infrastructure services, a lot of that rests on upstream decision-making in the process of creating infrastructure. So, we really need to start right at the top in terms of thinking around what will our infrastructure needs be in the future? What are the options for addressing those needs? How can we turn a set of options

into a strategy, because so many things flow from that, in terms of questions around finance, procurement, delivery, operation and maintenance. If we don't get things right up front, then a whole load of other things go wrong after that. The notion of EBI is to really try to learn. To look around the world. Everyone is facing challenges. Those challenges depend different contexts. Places are different but actually a lot of the challenges which governments and infrastructure agencies are facing are remarkably similar. EBI is about sharing insights, learning what has worked, and disseminating that, and also trying to embed it. So, not just putting reports and guidance out there, but having deep and ongoing conversations. As we have done in New Zealand with the Infrastructure Commission to try and work things through and embed what has been learned in practice.

Peter Nunns: You've spoken to a couple things there that are really interesting and worth reflecting on. One of those is around what best practice is and how much we can learn from others. One of the things about New Zealand is, like everywhere else, we're different. There are idiosyncratic features of every individual place, sometimes we take those things, and we say, 'Okay, we need to do things in a different way to get the results that we want'. But how true is that? How common is good practice when it comes to strategic infrastructure planning, and how shareable are those lessons in your view?

Jim Hall: Yes, the challenges that people face just pop up again and again all over the place. Things like, how do we get around political short-termism? Politicians wanting to be seen to be announcing new things without really understanding the whole system and how the system works together to deliver the services that are needed. Stop-start issues around planning and consenting. Issues around costing and realism with respect to finance – these pop up all over the place. The solutions are context specific. Much as we may or may not all wish to be in Switzerland or Singapore – we're not. So, the solutions do depend on the national context, but nonetheless, there are similarities there too. It's important to try and share that insight. I think politicians get this as well. For example, when I'm meeting with people, often the first thing they say is, 'Well, where in the world has got this right? What can we learn?'.

Peter Nunns: What I found really interesting about that – and some of the engagements we had with you – is asking what does good look like when it comes to planning an infrastructure project? What would you expect to see at different stages of development? The 'Aha' moment as we were going through and thinking about that was, 'Wait a minute, there's local peculiarities that you have to take into account, like New Zealand's ground conditions and geological challenges, but there's general concepts of plan before you announce, scope projects, look at options, and test value for money'. That's all pretty universal, isn't it?

Jim Hall: Yes, that's certainly true. Every place is different, but actually we're in a converging world. Also, the organisations which are financing and delivering infrastructure, these are global organisations and multinational businesses. So yes, we have a lot in common in many senses.

Peter Nunns: That's an interesting angle on it. I was at an ICE event recently where that was the topic – the role of private finance and infrastructure investment. Any reflections on what larger global investors expect to see when they go into different national contexts? Are they looking for some commonality of approach?

Jim Hall: Yes, that's an instance where there are commonalities – in the sense that they are looking for somewhere to put their finance. We often hear about this wall of capital, which needs to be deployed somewhere. There are pension funds looking for returns. Yet, the flip side to that is that they're acutely aware of what those returns might be and, above all, what the risks are. That is the barrier, isn't it? The whole set of categories and risk. Those risks, there are commonalities, but there are place specific things as well. The commonalities, in particular, relate to delivery. The fact that projects exceed time and cost in practically every part of the world and in relation to revenue. It's very hard to predict – in many contexts depending on the nature of the contract – what revenues may be. There are political uncertainties everywhere, and that's one of the biggest risk categories. But to understand those uncertainties, you really need to understand places. They may look superficially similar, stop-start, regulatory regimes, which are not perfectly adapted to what's actually supposed to be delivered and so on. You've got to know a lot to understand those political uncertainties. And then countries are more or less exposed to exchange rate risk as well, particularly in low- and middle-income countries – that's something that investors are really alert to.

Peter Nunns: Some of these risks are country-level risks that you can't really control in the short term, but some of them are project risks, right? On those, it seems like the message is 'Do what you can to de-risk the project in terms of planning, design and site investigation before you try to solicit'. Would that be a fair summation?

Jim Hall: Right. I think in many senses the private sector gets this more deeply than sometimes the public sector does. They take projects further down the feasibility journey and are more intent on avoiding technical risks and doing stuff in tried and trusted ways and in ways that the public sector doesn't actually get the importance of. Private finance will do a lot before they sign.

Peter Nunns: That is a super interesting insight. I'd love to go further down that, but I did want to touch upon a couple of other issues in the time we've got. One of those is around thinking about our long-term infrastructure needs. Again, we've got some really useful insight from folks at EBI on this, to help test some of our emerging thinking. You've framed in your best practice guidance that you've published, that needs assessment is one of the key steps in developing an infrastructure strategy and infrastructure investment plan. But when we talk to people about this, and when we look at it, it's really hard as the future is uncertain. In New Zealand, we've got a very volatile population growth path, with migration being very cyclical and changing quite a lot from year to year. That makes it quite difficult to go and say: 'How much do we need to add for population growth?'. Any reflections on the nature of forecasting and future uncertainty challenges and what can practically be done to overcome them.

Jim Hall: I would underline how significant the uncertainties are. I mean particularly post-pandemic. If we look at what has happened to commuting patterns due to working from home and public transport usage. I think it's pretty true to say that pre-pandemic, no one would have predicted this. Also, I mean, we face a circularity in infrastructure policy, in the sense that demand depends on what we do. There's a big emphasis on the future of electricity demand as we decarbonise our economies, but exactly how quickly demand for things like electric vehicles and heat pumps ramps up depends in large part on what policies are actually adopted to promote those things. So, one quite quickly gets into kind of circular discussions around needs. But on the other hand, I think that process of thinking it through, developing scenarios, and revisiting those scenarios as the world changes for how our needs may evolve is absolutely fundamental. It's an incredibly informative business and a good infrastructure strategy has to demonstrate how it adds up in a range of different scenarios. If it doesn't do that, then it's just aspirational words.

Peter Nunns: That's one of the things that we eventually realised about needs analysis after a couple goes at doing it, was you had to take a budget constrained view of this, right? If you were just going and saying, 'Well, if the Martians landed, what would we ask them to build?', you weren't actually providing useful advice, right? You had to think about your means as well as your needs. That was the light bulb moment for us there.

Jim Hall: Yes, that's absolutely right. This is an iterative process. One has to kind of bounce back and forth between what's the range of needs and what can we actually do. Within the UK, the National Infrastructure Commission is told by government what its fiscal remit for public investment in infrastructure is, which currently has a ceiling of 1.3% of GDP. In a way that makes our life a little bit easier. We know what the envelope is, and so we have a firm constraint. On the other hand, I think to some extent, it narrows down the question a bit too much, because it sidelines the bigger question around investment. Investment is there to promote growth, which yields tax returns and receipts for the government and changes the fiscal envelope. So, there's a bigger picture there in terms of the way in which what we're talking about actually relates to the future economy.

Peter Nunns: This is what we realised, I think that the National Infrastructure Commission in the UK has done some really useful work on this. The paper on economic growth and demand for infrastructure investment that was published in 2018 lays this out in an incredibly clear way. That has fed into some of our thinking as well. When we started to look at this, we started to look at, 'What would baseline scenario look like?' Then started asking questions such as: 'What would cause that to change?' 'Where could we go and get more money?' 'Where would we have opportunities to go and do growth-stimulating investments?' I think that complicates the question a little bit, but you can still deal with it in a scenario-based way.

Jim Hall: That's absolutely right, both scenarios in terms of the level of investment, but then also scenarios in terms of what happens next and what the growth implications of that are.

Obviously, that's regionally specific. The whole reason we're talking about this so much is that what happens next depends fundamentally on what you do and how you do it. There's no kind of guarantees about the future here. That's why these choices are so important.

Peter Nunns: Bang on. We've got a couple minutes left. I wanted to just ask you a sort of brief question about some of your academic research. As mentioned, you focus on climate change and infrastructure and how infrastructure systems affect climate change. For instance, you've done some work on how wastewater treatment standards affect electricity use in wastewater treatment plants. That's interesting, speaking to those interdependencies between infrastructure networks. But you've also done quite a lot of work on natural hazard risk and climate related risks to infrastructure. That's something that we've been thinking about as well for our current work. How do we go and size that up? How big is this and how uncertain is that going to be in the future? Are there any key insights that you've got in that area that you might highlight for this sort of work?

Jim Hall: What we find when we look at infrastructure systems and climate hazards to those systems, so floods, drought, storms, and not just climate hazards, seismicity and tsunami and so on, is that the vulnerability is very variable. There are such big differences in terms of both what the potential impacts might be and the potential cost of doing something about it. In a sense, it takes us back to a version of what we've already been talking about. Getting the adaptation and the resilience part right, depends on really careful analysis and prioritisation. There's no way we can afford absolute levels of resilience and safety. We wouldn't want to do that anyway, and there are lots of potentially wasteful interventions and investments out there. Prioritisation is super important. The other thing this gets us back to is, it's really important to get it right from the start, to factor resilience upfront. If that's done in the right way at the right time, the costs are so much less than having to think about retrofits – having to go back and fix things when you work out that they're in the wrong place or not built to the right standard.

Peter Nunns: I think that's the challenge – most of the infrastructure we're relying on at any point in time has already been built and climate change is one where the risks are shifting on us.

Jim Hall: That's right. We're never going to get this perfectly right. A slightly reassuring aspect of this is that it is a portfolio problem. As you say, you're talking about lots of assets in lots of different places, and that, in a sense, is kind of reassuring. That overall – as long as we have some reasonable prioritisation mechanism – we're not going to be optimal, but we're possibly not going to be very far off. We've got to align this also with asset life cycles. We might not be quite right for a bit, but we know that we've got to go and visit an asset again at some point in the future, and then we're going to fix it.

Peter Nunns: Professor Jim Hall, thank you very much for joining us. It's been an incredibly insightful conversation. Thank you once again for you and your colleagues' assistance to our work. We really appreciate it.

Jim Hall: It has been great chatting to you and fantastic working with the New Zealand Infrastructure Commission. I hope we can keep talking in the future.

Peter Nunns: We will. Thanks, Jim.

Outro: Thanks for listening. Find out more about the work Te Waihanga is doing to transform Aotearoa at **tewaihanga.govt.nz**